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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,001	04/17/2004	Anatoly E. Rokhvarger		9211

51896 7590 11/26/2008  
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EXAMINER
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VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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11/26/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/826,001	<b>Applicant(s)</b> ROKHVARGER ET AL.	
	<b>Examiner</b> KALLAMBELLA VIJAYAKUMAR	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 21-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21, 22 and 24-29 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

- Applicant's amendments filed 07/17/2008 have been entered. Claims 13-20 cancelled. New claims 21-29 as amended are currently pending with the application. New Abstract provided.
- Applicant's amendment overcomes the rejection of claims under 35 USC-I-Paragraph cited in the last office action.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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1. Claims 21-22, 24-25 and 27-29 are rejected under 35 U.S.C. 103(a) as obvious over

Topchiashvili et al (US 6,010,983) in view of Dorris et al (US 5,866,515) .

*In the absence of a definition of a nano-size, nano-phase, nano-thick and nano-structure by the applicants, the examiner construes the terms to encompass a size of 1-1000 nm commonly taught in the nanotechnology art (See. Philips et al, US 6,755,886; Cl-2, Ln 21-25; or Domb et al US 5,578,325, Cl-10, Ln 24-43).*

Topchiashvili et al teach a sintered superconductor wire composition <3D-lead> containing an aligned/oriented superconductor ceramic oxide of YBCO. The coated wire was made by coating a substrate with an emulsion containing the ceramic YBCO particles, ultra-fine Ag-particles <nano particles that reads on dope particle; see Cl-4, Ln -4> and liquid-silicone polymer <silicate precursor>. The wet coated wire was processed by magnetically orienting YBCO particles in a preferred direction <c-axis>, slowly polymerizing of the silicone around 250C and heat treating the composition between 800-950C. Topchiashvili et al further teach the presence of a uniform dispersion of Ba<sub>2</sub>SiO<sub>4</sub> (silicate glass phase) and components such as SiC, Si, C and BaCO<sub>3</sub> (impurity and phases due to superconductor break down) in the wire composition (Abstract, Fig 2-3; Cl-1, Ln 41 to Cl-2, Ln 33; Cl-3, Ln 1 to Cl-4, Ln 23; Cl-5, Ex-1). Topchiashvili et al teach using an ultrasonically dispersed emulsion to coat the substrate, but it does not explicitly disclose the particle size of the YBCO ceramic oxide. The thickness of the superconductor film over a 10 micron silver filament would obviously be less than 10 micron (Cl-6, Ex-6) that is similar to that in the instant disclosure (Spec, P-0152). The J<sub>c</sub> was >10<sup>4</sup> A/cm<sup>2</sup> (Cl-2, Ln-65-67).

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The prior art is silent about the particle size of the HTS superconductor particles, and the nanostructure of the sintered lead composition, and the orientation of the ceramic and dopant crystals per claim-21.

In the analogous art, Dorris et al teach forming superconductor coated silver wires by applying the superconductor powder dispersed in a polymer carrier and/or solvent wherein the particle size of the superconductor particles ranged from 0.1-5 micron (Abstract, Cl-3, Ln 10-37), and further removing the organic material by heat treatment (Cl-8, Ln 1-19).

It would have been obvious to a person of ordinary skilled in the art to substitute the superconductor powders in the structure of Topchiashvili et al with the superconductor powders of Dorris et al as functional equivalent with predictable results and reasonable expectation of success, because the teachings are in the analogous art of coated HTS oxide superconductor wires. With regard to the structure of the sintered lead/wire, the prior art composition, structure and method of making the wire including components processed and the process parameters, and utility of the wire are similar to that taught by the applicants (Specification, Page-13, Para-2-4; Pg-14, Ln 17-24, Pg-15, Para-2, 4) whereby the instant claimed nano-phase honeycomb-like three dimensional setting network structure will be obvious in the prior art composition because similar compositions are expected to possess similar properties and characteristics, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Further c-axis orientation of superconductor oxide crystals by the applied magnetic field in the processing of the wire would be obvious in view of Holloway that

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clearly teaches attaining C-axis orientation by magnetic alignment of YBCO particles with improved current density (See Halloway; US 5,529,981, Abstract, Cl-10, Ln 37–65).

With regard to claim 22, the prior art teaches YBCO.

With regard to claims 24-25 and 27-29, the prior art structure, composition, method of making the structure and its utility are similar to that claimed by the applicants, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

2. Claims 21-22 and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rokhvarger et al (US 6,617,284).

The applied reference has a common Inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Rokhvarger et al teach a superconductor wire composition <3D-lead> containing an aligned/oriented superconductor ceramic oxide of YBCO made by coating a Ni substrate with an ultrasonically dispersed emulsion containing the ceramic YBCO particles, Ag-particles and

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liquid-silicone polymer <silicate precursor>, magnetically orienting the YBCO particles, polymerizing the silicone and heat treating the composition between 800-950C. Rokhvargher et al further teach the presence of a uniform dispersion of Ba<sub>2</sub>SiO<sub>4</sub> (silicate glass phase) and components such as SiC, Si, C and BaCO<sub>3</sub> (impurity and phases due to superconductor break down) in the wire composition. The coating suspension composition comprised of a micron-size particle of Y-Ba-Cu-O (i.e. 1-micron; Ex-14) and silver particles with a particle size less than 1 micron that meets the limitation of nano-sized dope. YBCO particle with "a micron size" overlaps with the art defined 1-micron limit and in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). The J<sub>c</sub> for the article was >10<sup>4</sup> A/cm<sup>2</sup> (Cl-6, Ln 6-8).

The prior art is silent about the nanostructure of the sintered lead composition, and the orientation of the ceramic crystals claim-21.

With regard to the structure of the sintered lead/wire, the prior art composition, structure and method of making the wire including components processed and the process parameters, and utility of the wire are similar to that taught by the applicants (Specification, Page-13, Para-2-4; Pg-14, Ln 17-24, Pg-15, Para-2, 4) whereby the instant claimed nano-phase honeycomb-like three dimensional setting network structure will be obvious in the prior art composition because similar compositions are expected to possess similar properties and characteristics, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ

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430, 433 (CCPA 1977). Further c-axis orientation of superconductor oxide crystals by the applied magnetic field in the processing of the wire would be obvious in view of Holloway that clearly teaches attaining C-axis orientation by magnetic alignment of YBCO particles with improved current density (See Holloway; US 5,529,981, Abstract, Cl-10, Ln 37-65).

With regard to claim 22, the prior art teaches YBCO.

With regard to claims 24-29, the prior art structure, composition, method of making the structure and its utility are similar to that claimed by the applicants, and where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

#### *Allowable Subject Matter*

Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither teaches nor fairly suggest a sintered structure containing uniformly aligned YBCO ceramic crystal grains with a length of 10-25 nm.



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***Response to Arguments***

Applicant's arguments filed 07/17/2008 have been fully considered but they are not persuasive for the following reasons.

In response to “all features of the US patents # 5,529,981 (Holloway), # 5,660, 774 (Stangle, et al), and # 5,866,515 (Dorris, et al) that employs the respectful Examiner in his Art Unit # 1793 of 04/17/2008 are inconsistent to object our PA # 10/826,001” and they do not teach the claimed composition/structure or process (Res, Pg 7-9); it has been held that a prior art reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the prior art/s have been used as combination references that are in the field of superconductor and/or nanotechnology either to establish obviousness of the instant claims and/or obvious presence of characteristics in the prior art. The argument on pg. 10 shows a lack of comprehension of priority dates and how to combine references.

In response to the argument that the technical world recognizes that the nano-size encompasses particles with 100 nm or less in size; and non-nano or micro crystals encompass sizes greater than 1000 nm or >0.1 micron or both sizes (Pg-11-13); and therefore the instant claimed “nano” encompassing a particle size of 100 nm or less would be obvious to specialists in the field; and the term “Nanoparticle” encompasses 1-1000 nm in patent literature that would be obvious to a person of ordinary skilled in the art as cited in the previous office actions. The argument on pg. 19 as to the 700 nm size is to a feature which is not claimed.

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In response to the argument that the raw materials processed in the prior art and the instant claims are different because the prior art teaches particles with 1- 1000 micron unlike instant disclosure having aggregated nano and micro particles have a mean size of 0.7 micron; (i). prior art/s never disclosed the argued particle sizes; and (ii). the instant disclosed agglomerates with a size of 0.7 micron can have particles with size greater than 100 nm to about 700 nm that does not meet the argued limitation of “Nano” i.e.100 nm or less (Pg-18-19). Further the components processed in the prior art and their ratios are similar to that in instant disclosure (P-0073), and furthermore the coating compositions coated by dip coating lead to 10 micron thick sintered films both in the prior arts and the instant disclosure (P-0152), whereby the solid content, particle sizes of the components used, the coating compositions and their viscosities should be similar in scope (Res, Pg-25; Also see US 6,617,284; Cl-12, Ex-14).

In response to the argument that the instant process involves slow burning of organic and the prior arts do not disclose this feature (Res, Pg-21-22), the prior arts teach the slow drying of the coating and sintering of the composition at elevated temperature in oxygen atmosphere; and the slow burning of organic would be obvious to a person of ordinary skilled in the art because otherwise uncontrolled burning would lead to uncontrolled sintering due to combustion and the fractures in the structure due to rapid escape of combustion products; and the term very fast heating with out a numerical value for rate of heating does not distinguish the process over prior art; and these are not the limitations of the instant claims. The restoration of orthorhombic morphology would be obvious over annealing/treating of the structure in an oxygen atmosphere, because that is the desired superconducting phase (Pg-23). Regarding the use of gamma-rays for curing in US 6,010,9873 (Pg 23-24), use of radiation for curing, catalytic and radical methods for

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curing the polymers are well known in the polymer art, and use of electromagnetic rays for curing the polymer in forming instant structure is not precluded or shown to be detrimental.

In response to the argument that none of the references teaches the claimed Nano-features of the structure (Res, Pg-26-28), the prior art composition; components used in making the wire and its processing conditions, and its utility are similar to that claimed by the applicants as shown above, and the claimed Nano-structures should be present in the prior art structure, and thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). The vague properties claimed bear no relationship to the specifics argued.

In response to the characteristics and properties of the instant claimed structure (Pg-29-31), the prior art  $J_c > 10^4$  A/cm<sup>2</sup> overlaps with instant claimed  $\geq 10^8$  A/cm<sup>2</sup> and establishes prima-facie obviousness.

For the reasons set forth above, applicants fail to patentably distinguish their composition and structure over the prior art. It is suggested that applicants call the examiner to discuss the patentability issues.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/KMV/

Nov 22, 2008.

/Stuart Hendrickson/

Primary Examiner, Art Unit 1793

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	<b>Examiner</b> KALLAMBELLA VIJAYAKUMAR	<b>Art Unit</b> 1793	